



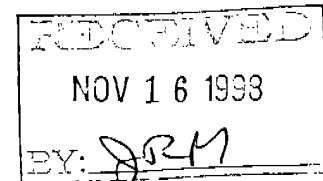
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Bruce Halstead
US Fish and Wildlife Service
1125 16th St, Rm 209
Arcata CA 95521-5582

11 November 1998

Re: Permit Numbers PRT-828950 and 1157



Dear Mr Halstead:

The following are my comments on the aquatic components of the proposed PALCO Sustained Yield Plan and Habitat Conservation Plan and on the EIS/EIR evaluating the plan, based on my reading of the draft EIS/EIR (1998) and the PALCO SYP/HCP public review draft (1998). My remarks focus is on coho salmon because this is the species most threatened by PALCO timber harvesting and because this is where my expertise lies, although it is likely that adequate protection for coho salmon will result in protection for many other (but not all) aquatic species in the affected streams. My basic conclusions are (1) SYP/HCP does not provide adequate protection for coho salmon and will result in "take" as defined by the Endangered Species Act, (2) the long term result of the SYP/HCP is likely to be extinction of coho salmon in the affected streams, and (3) the loss of coho salmon on PALCO lands will contribute to the continuing decline of coho salmon in California streams, rather than contributing to their recovery. The comments leading to these conclusions are in the following sections: (1) credentials, (2) how SYP/HCP fits into the big picture of coho salmon decline and conservation, (3) some comments on ESA's 'take' provisions, (4) why the SYP/ HCP riparian management zone policy is likely to have a negative impact on coho salmon, and (5) overall conclusions.

Credentials. I have been studying factors affecting the decline of native fishes, including salmon, in California for nearly 30 years and have published widely on the subject. In the late 1980s, I conducted a major study of the fishes of the Eel River basin, which revealed how few coho salmon were left in a drainage that was supposed be one of the strongholds of the species in California. This led in turn to an evaluation of the overall status of coho salmon in California, conducted by Dr. Larry Brown (a researcher in my laboratory) and myself. The analysis was subsequently published in a peer-reviewed journal (Brown, Moyle, and Yoshiyama 1994) and the results confirmed by a subsequent study by NMFS (Adams et al. 1996).

The Big Picture. The basic conclusion of our status study was that wild coho salmon populations statewide had declined by at least 94% since the 1940s, that about half of all streams that once contained coho runs no longer had them, that most of the remaining populations were small and easily extirpated, and that the decline was continuing. This study was cited extensively in the documentation provided by NMFS to support their decision to list the coho salmon in California and southern Oregon as a threatened species. In fact, our study erred on the side of

over-estimating the abundance of coho salmon; the estimate that around 5,000 wild coho spawners still entered California streams annually now seems too generous, based on subsequent estimates of salmon numbers in places like the Eel River. This makes every remaining population important for the survival of the species in California. This is particularly true of the streams influenced by PALCO operations. Although reliable estimates of coho numbers in these streams are lacking, existing information (e.g., in the EIS/EIR, 3.8-52 and in field notes from California Department of Fish and Game surveys) makes it likely that they support 5- 10% of the remaining wild coho salmon spawners in California (200-500 spawners per year). Because many of the coastal streams in the region have already lost their coho populations, the wild populations remaining will be an important source of colonists if these neighboring streams recover or are restored from past devastation.

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The causes of coho decline have been multiple and interactive, but it is clear to me, based on personal observations and reading of the literature, that logging and associated activities have been the single biggest cause on the north coast. Since the 1940s, intensive logging on the steep and geologically fragile hillsides of the region has resulted in the key habitat of many coho streams being literally buried in sediment and debris, while large logs, a key component of coho habitat, have been systematically removed. For better or worse, most of this logging and destroyed coho habitat has been on private land owned and managed by large timber companies like PALCO. Much of the remaining coho habitat is still on private land. This would seem give private companies a special obligation, moral if not legal, to protect completely the remaining coho habitat on their land, to make up for past transgressions. The proposed HCP represents a compromise between the perceived needs of PALCO and the survival requirements of the fish as determined by PALCO and the cooperating agencies. Given the declining state of coho salmon populations, however, a compromise can only represent continued decline, perhaps slowed down a bit.

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Take. The federal Endangered Species Act defines 'take' of an endangered species very broadly for the purposes of protection. For example, I recently received a 'take' permit from NMFS that will enable me to conduct fish surveys in a degraded watershed that still has a small coho salmon run. This permit even restricts the number of juvenile coho salmon I can observe by snorkeling in the stream because observing coho salmon in this manner can momentarily change their behavior, so is included in the definition of 'take.' It is highly unlikely, however, that such observations will cause any mortality to the salmon. Logging on PALCO lands will certainly result in take of salmon, not only in the sense of temporarily disturbing them at road crossings or through logging activities, but in causing mortality. This mortality will not be readily observable because it will come mainly in the form of decreased survival of embryos and juveniles in response to small but incremental losses of habitat (see next section). The result, however, is continued decline of coho populations, eventually to local extinction. This basic result is the same whether it takes one year or 50 years. Indeed, even rapid local extinction is certainly possible under the proposed HCP/SYP. It is not hard to imagine another major storm event, such as the 1964 storms that devastated so many north coast watersheds, causing a major landslide in a recently logged area, which in turn fills in a stream with silt and debris, eliminating the salmon. This kind of event is not hard to imagine because it has already happened repeatedly.

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Riparian management zones. One of the most serious weaknesses of the SYP/HCP are

the proposed Riparian Management Zones (RMZ); they are too narrow and allow too much intrusion for logging. It is important to keep in mind when considering the RMZs that the watersheds involved are some of the most fragile/erodible on the Pacific coast and that even small losses of stream habitat should not be tolerated if we are sincere in recovering coho salmon populations.

For *Class I streams* ("fish-bearing") the proposed RMZ is 170 feet but this is not a true buffer zone between logging activities and fish. Only the first 30 feet is a no-logging buffer and even here some tree removal is allowed to "enhance riparian function," a condition that could be open to broad interpretation. Presumably, a number of large trees could be removed if it was deemed important to allow more sunlight to reach the stream to allow more algae to grow to enhance aquatic food webs leading to juvenile salmon, a practice with questionable long-term benefits. The next two bands (30-100 ft, 100-170 ft) allow some selective logging without entry of major equipment. The proposed RMZ management within the three bands is bound to be an improvement over past practices but it suffers from a lack of guarantees that it will in fact allow adequate accumulation of fallen trees in the stream or that it will be able to prevent slumps or other sources of silt from entering the stream. As George Pess indicates in his analysis submitted for your review, the band widths themselves seem to be arbitrary and are not adequately justified in terms of their benefits to coho salmon. A conservative course of action for the PALCO lands, given their extreme fragility, would be to have an RMZ that would have a high probability of protecting the fish in the face of environmental and informational uncertainty. I suggest that RMZ should be at least twice the width of the present zone, with the no-cut zone be based on the maximum height of local site-specific trees. This means, of course, that even the temporary 100 ft no-cut buffer zone established in AB 1986 is likely to be inadequate (as indicated in Pess' analysis).

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For *Class II streams* (contains aquatic life but not fish-bearing) the RMZ is narrower (100 ft), with a no-harvest band of 10 ft and a limited harvest band for the rest of it. This prescription is not restrictive enough to avoid harming coho salmon populations. Despite the implication that Class II streams are fishless, many streams placed in this category contain juvenile coho salmon at least seasonally, especially in winter. The small salmon will move up into small, clear tributaries in winter to avoid the high turbid flows of the main stream following storms. There is a growing consensus among coho salmon biologists that over-wintering habitat, mainly off-channel habitats and concentrations of large woody debris within channels, is a key limiting factor for coho salmon survival (e.g., Nickelson et al. 1992; Beechie et al. 1994; Sandercock 1996). In addition, Class II streams are often key habitat for various amphibians, including uncommon species such as the tailed frog (*Ascaphus truei*). This suggests that Class II streams deserve as much protection as Class I streams or at least a RMZ and no-cut zone based on site-specific tree height. This also suggests that the 30 ft no-cut restriction for Class II streams under AB 1986 is very inadequate.

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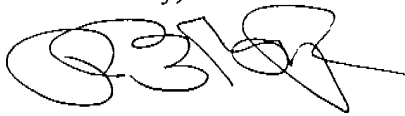
For *Class III streams* (ephemeral streams, "with no aquatic life.") the RMZ is largely non-existent or affords little protection. These streams in fact need considerable protection. First, most do contain at least some specialized aquatic invertebrates and amphibians, depending on how long the streams flow during a season. Second, they can be major contributors of silt and other debris into streams, especially those draining steep slopes. Logging activities (including road building) around or in these water courses can result in small ephemeral streams becoming large

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gullies, dumping the sediment into the Class I and II streams. Given the potential for Class III streams to affect the habitat for coho salmon spawning and rearing downstream, they need full protection from activity likely to increase erosion.

Conclusions. In my professional opinion, the PALCO SYP/HCP is a step in the right direction, but does not go nearly far enough towards protecting coho salmon. If adopted and implemented it is highly likely that coho salmon populations (and those of other aquatic creatures) will continue to decline in affected streams, eventually to extinction. This will have implications not only for local coho salmon populations but for the entire Northern California/Southern Oregon ESU, which NMFS has listed as a threatened species because of its continuing decline. If present trends continue, the likelihood of the long-term persistence of this ESU is low. The management prescriptions described in the SYP/HCP are unlikely to improve conditions for coho salmon and are highly likely to reduce the ability of the Northern California/Southern Oregon ESU to survive in the wild. Coho salmon populations on PALCO land are a significant percentage of the total wild coho remaining in California and as such, merit more protection than the SYP/HCP gives them.

Sincerely,



Peter B. Moyle
Professor of Fish Biology

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